

## **ELECTRIC HEATING CUSHION DEVICE**

### **BACKGROUND OF THE INVENTION**

#### **1. Field of the Invention**

This invention relates to an electric heating cushion device, more particularly to an electric heating cushion device suitable for cushioning and warming different body parts.

#### **2. Description of the Related Art**

In U.S. Patent No. 6,353,211 granted to the Applicant, an electric heating device 1,1' is disclosed. Referring to Figs. 1 and 2, the electric heating device 1,1' is shown to include a flexible heating member 2, a closure unit 3,4 and an electric wire unit (not shown). The heating member 2 is formed by winding a flexible sheet into a tubular body, and includes two dielectric layers 21 made from a glass fiber material, and an electric heating film layer 22 disposed between the dielectric layers 21 and adapted to generate heat when supplied with electric power. In Fig. 1, the closure unit 3, which is formed as an elongated connecting block, has two longitudinal blind grooves 31 for receiving fixedly two opposite end portions 23 of the heating member 2. In Fig. 2, the closure unit 4 includes a set of female buttons 41 and a set of male buttons 42 that are respectively disposed on the two opposite end portions 23 of the heating member 2 and that engage each other to form the heating member 2 into a tubular body. Since the closure unit 3,4 is needed to hold the end portions

23 so as to form the heating member 2 into the tubular body  
in the aforesaid electric heating device, the manufacturing  
cost is relatively high. Moreover, the retaining force  
resulting from engagement of the female and male buttons  
5 41, 42 may be insufficient in use.

#### SUMMARY OF THE INVENTION

The object of the present invention is to provide an  
electric heating cushion device which is suitable for  
cushioning and warming body parts and which has a firm  
10 construction.

According to this invention, the electric heating  
cushion device includes a heating member in form of a  
flexible sheet which has two end portions opposite to each  
other in a longitudinal direction, and a flexible  
15 intermediate portion interposed between the end portions.  
The heating member includes upper and lower dielectric  
layers and an electric heating film layer which is disposed  
between the upper and lower dielectric layers and which  
is adapted to generate heat when supplied with electric  
20 power. The upper dielectric layer at one of the end portions  
is brought into a permanent interengagement with the lower  
dielectric layer at the other one of the end portions so  
as to roll the intermediate portion into a tubular body.  
The tubular body defines a cylindrical space therein, which  
25 extends to terminate at two open ends that are opposite  
to each other in a transverse direction relative to the  
longitudinal direction. A cushion member is removably

inserted in the cylindrical space through one of the open ends. An electric wire unit has a first end extending into the heating member and connected electrically to the electric heating film layer, and a second end opposite to the first end and adapted to be connected electrically to an electric power source.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiment of the invention, with reference to the accompanying drawings, in which:

Fig. 1 is a sectional view of a heating member of a conventional electric heating device;

Fig. 2 is a sectional view of another form of the heating member of the conventional electric heating device;

Fig. 3 is a partly exploded perspective view of the preferred embodiment of an electric heating cushion device according to this invention;

Fig. 4 is a fragmentary perspective view of a heating member of the preferred embodiment;

Fig. 5 is a cross-sectional view of the heating member of the preferred embodiment; and

Figs. 6 to 8 are schematic views showing the preferred embodiment in a state of use.

#### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring to Figs. 3 and 4, the preferred embodiment of an electric heating cushion device according to the present

invention is shown to comprise a heating member 70, an electric wire unit 81, a cushion member 100, two end edge caps 90, and a fabric sleeve 110.

5 The heating member 70 is in the form of a flexible sheet which has two end portions 74 opposite to each other in a longitudinal direction, and a flexible intermediate portion 76 interposed between the end portions 74. The heating member 70 includes upper and lower dielectric layers 72,71 which are formed from a glass fiber material, and an electric heating film layer 73 which is disposed  
10 between the upper and lower dielectric layers 72,71. The electric heating film layer 73 is capable of generating heat in a known manner when it is supplied with electric power. The upper and lower dielectric layers 72,71 are sealed to each other by heat-sealing at peripheral portions thereof so as to cooperatively enclose the electric heating  
15 film layer 73. With reference to Fig. 5, the upper dielectric layer 72 at one of the end portions 74 is brought to an undetachable and permanent interengagement with the lower dielectric layer 71 at the other one of the end portions 74 by high-frequency welding so as to roll the intermediate portion 76 into a tubular body 60. The tubular  
20 body 60 defines a cylindrical space 75 therein, which extends to terminate at two open ends 751 that are opposite to each other in a transverse direction relative to the longitudinal direction.

25 Referring back to Fig. 1, the electric wire unit 81 has

a first end which extends into the flexible sheet and which is connected electrically to the electric heating film layer 73, and a second end which is opposite to the first end and which is connected to an electric power adapter 120 or a battery casing 130. The electric power adapter 120 is adapted to be plugged into a receptacle (not shown) such that the electric heating film layer 73 can be supplied with electric power. The battery casing 130 is adapted for receiving a battery set (not shown), thereby permitting the heating cushion device to be carried by the user. The electric wire unit 81 is wrapped with an insulating layer of silica gel material to prevent electric leakage. Preferably, a known temperature regulator 82 is connected electrically to the electric wire unit 81 to permit regulation of the temperature of the heating member 70.

The cushion member 100 is in the form of an inflatable body, and is removably inserted in the cylindrical space 75 through one of the open ends 751.

The end edge caps 90 are made from a plastic material, and are configured to sheathe the open ends 751, respectively, so that the electric heating film layer 73 is shielded in the transverse direction.

The fabric sleeve 110 is sleeved on the tubular body 60 between the end edge caps 90 for providing a certain degree of comfortableness in use.

In use, referring to Figs. 6 to 8, the tubular body 60 can support the neck part, the waist part, or the wrist

part of the user. When the electric heating film layer 73 is supplied with electric power, the tubular body 60 is heated for warming the supported body part to help relax the muscle.

5        While the present invention has been described in connection with what is considered the most practical and preferred embodiment, it is understood that this invention is not limited to the disclosed embodiment but is intended to cover various arrangements included within the spirit  
10        and scope of the broadest interpretations and equivalent arrangements.